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THE KEW INDEX OF PLANT-NAMES.

Index Kewensis plantarum phanerogamarum nomina et synonyma omnium generum et specierum a linnaeo usque ad annum mdccclxxxv complectens nomine recepto auctore patria unicuique plantae subjectis. Sumptibus Caroli Roberti Darwin, ductu et consilio Josephi D. Hooker, confecit B. D. Jackson. Fasciculi II. (Oxonii: E prelo Clarendoniano, MDCCCXCIII.)

THE appearance in rapid succession of the first two fasciculi forming the first volume of this splendid work, to be fittingly known to all time as the "Index Kewensis," is an event of supreme importance not only to the widely limited section of the scientific world which is professedly botanical, but also to the much wider circle of those who are interested in plants, whether this be from their more strictly technical side as the source of economic products, or from their more general and popular one, as objects of pleasure in cultivation and decoration. With the completion of the work in the second volume, which we are glad to know is not likely to be delayed beyond the current year, everyone will have within reach a book of reference in which may be found the correct name, the synonymy, the authority for the name, and the title of the work in which it is first published, along with an indication of the native country of any flowering plant described before the end of the year 1885.

It is to Charles Darwin we owe primarily this valuable work. In a short preface to the first fasciculus, Sir Joseph Hooker gives the following concise narrative of its origin:

> "Shortly before his death Mr. Darwin informed me of his intention to devote a considerable sum in aid or furtherance of some work of utility to biological science; and to provide for its completion, should this not be accomplished during his lifetime. He further informed me that the difficulties he had experienced in accurately designating the many plants which he had studied, and ascertaining their native countries, had suggested to him the compilation of an index to the names and authorities of all known flowering plants and their countries, as a work of supreme importance to students of systematic and geographical botany, and to horticulturists, and as a fitting object of the fulfilment of his intentions.
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> "I have only to add that, at his request, I undertook to direct and supervise such a work; and that it is being carried out at the herbarium of the Royal Gardens, Kew, with the aid of the staff of that establishment."

Everyone who has had dealings with plants will have realised the difficulties referred to by Mr. Darwin, and will welcome the issue of the "Index Kewensis" to which his munificence has given birth, and will congratulate Sir Joseph Hooker and Mr. Daydon Jackson on the result of their fifteen years' labour as the instruments through which the practical wish of Mr. Darwin is in process of being carried out. In passing, it is not uninteresting, from the point of view of history, to note the association of the name of Darwin with this Index. The biological sciences, whilst owing an eternal debt of gratitude to Linnæus for the order which he brought out of their preceding chaos, and for the binomial nomenclature his genius so deftly constructed as an alphabet of system, have reason to regret the retarding influence on their progressive development of the dogma of constancy of species which his scholasticism tacked on to his nomenclature, and which the nomenclature served to perpetuate. From the trammels of this dogma the genius and work of Darwin gave to biology final emancipation, and now by his forethought and munificence this enumeration of genera and species is being provided, the foundation of which rests on the enduring portion of the work of the great Swedish naturalist.

It is impossible to emphasise too strongly the value of the book before us. The most recent work of similar kind is the "Nomenclator Botanicus" of Steudel. But this was completed in 1841, and since that date the activity of botanists and the exploration of the world's surface has added so enormously to the known plants, that for practical purposes Steudel's Nomenclator has been for long out of date. The "Index Kewensis" is not, however, cast on quite the same lines as Steudel's work, and possesses valuable features absent from it. The Nomenclator was confessedly a critical botanical book, expressing the views of the limitation and relationship of genera and species held by the author, and consequently new names on the authority of Steudel occur throughout. The "Index Kewensis" makes no such profession. It takes the literature as it existed at the end of the year 1885, and from it is compiled, in conformity with certain definite guiding principles of plant-naming, the correct nomenclature, based, so far as the limitation of genera and species is concerned, upon the work of the most competent and trustworthy writers. The "Genera Plantarum" of Bentham and Hooker gives the standard of limitation of genera, and for species the conclusions of monographers and recognised authorities in the different groups supply the basis for the synonymy. The Index is therefore essentially a literary work carried out under effective botanical supervision, and the circumstances surrounding its production are most favourable. No one more qualified for this detailed work than Mr. Daydon Jackson, by his extensive knowledge of botanical literature and critical judgment, could have been found; in Sir Joseph Hooker the work has the supervision of the most experienced systematic botanist of the day; and Kew, the natural birthplace of a British book dealing with all flowering plants, affords unrivalled facilities for the investigation involved in such a work.

We have said the "Index Kewensis" gives the correct name of all plants described before the end of the year 1885. This brings up the much-discussed question of what is the correct name of a plant? Under what rules is it to be fixed? In its bearing on this question the Index appears most opportunely, and it may be regarded as the manifesto of the working British systematic botanists upon the vexed subject of plant-nomenclature; and a thoroughly practical one it is. Briefly the guiding rules of the Index are these:—The starting point for genera is the first edition of the "Systema" of Linnæus, published in 1735; the starting point for species is the first edition of the "Species Plantarum" of Linnæus, published in 1753; the correct name is that given by the author who first placed the plant in its proper genus. There is a soundness in these principles which should appeal to any unprejudiced mind. If nomenclature dates from Linnæus, who founded the system, naturally the first editions of his works dealing satisfactorily with genera and with species, are respective points of departure for the names of these, and in dealing with the species described by subsequent authors a similar course must be pursued. This code has been the tradition of the representative British botanists, and to it the former leaders of American botany also subscribed. It is the simple rule that priority determines the name. But, as with other rules framed by frail humanity for its guidance, this, if applied with rigorous inflexibility, would defeat the object it is designed to serve. To drop a name which has become generally accepted as the designation of a plant, and with which it is always associated, and take up for it some unknown name, simply because some one has discovered that this one preceded that by a few months in publication, or because it occurs a few lines earlier on the page of the same work, may mean logical adherence to the rule of priority, but is subversive of the purpose of nomenclature. Conformity with the code has therefore on the part of the botanists mentioned been governed by circumstances of practical expediency. They have kept in mind that nomenclature is only an aid to, not the aim of, the study of plants, and that a theoretically perfect nomenclature is inconsequent by the side of one which in practice admits of the ready recognition of the plants named; they have thought more of the identity of the plant and of its relationships than of the technical accuracy of the name under generally guiding principles, and have not therefore hesitated to cite older and obscure names as synonyms, and to ignore them if their use would replace others which had come to be generally and widely known. This principle of expediency and convenience, it has been said, is an unstable one, and to workers in fields of science in which it is not admitted may appear to be a mistake. But in the past of botany, in the hands of men really endeavouring to increase the general store of knowledge of plant-life, it has worked well. No doubt inconsistencies and mistakes may be found in the works of botanical writers who have acted upon it, traceable to a laxity which it introduces; but it has been a strong conservative element in nomenclature, whereas the application of the rule of strict priority has been most unsettling. For there are, unfortunately, men endowed with antiquarian zeal mated with sentiment which deems the naming of a species honour, and of a genus glory, who ferret through the pages of forgotten or unknown tracts or obscure journals, which perchance may contain a name, given by an author whose work has perhaps had no effect whatever upon the progress of the science, with which, under strict priority rules, they may supplant one custom has made part of popular language; or who rake out of correspondence (alas, that its preservation should serve such end) the history of private quarrels and jealousies of men whose names, as the roll of time has handed them down to us, carry only the attribute of scientific distinction, with the object of showing that one may have ignored the work of another, preceding it by a few days or weeks, and that consequently firmly established names must give place to those which strict priority demands. It is through such work, revelling in the overturning of authorities, which does not contribute to the progress of botany, and is essentially non-botanical, that many of the difficulties in nomenclature arise, and it merits the censure of all true botanists. Such work proves the wisdom of the botanists who have held aloof from binding agreement to strict priority rules, and against the load of synonymy and the confusion the strict priority rule would in these ways inflict upon plant-nomenclature, expediency and convenience are the protection to which appeal can be made. We are glad to note that in the "Index Kewensis" discretion has been exercised, and familiar and generally known names have not been sunk, although under the strict priority rule they should have been replaced by other and obscure ones.

That the procedure in the Index will meet with the universal acceptance of botanists may be hoped for; it cannot be expected immediately, when we have regard to the existing divergencies upon fundamental points. The laws of nomenclature formulated by the Paris Botanical Congress of 1867, made strict priority the basis of nomenclature, and were so generally adopted by systematic botanists out of England, that little was heard of the subject in subsequent years until a revolt of the younger American botanists against the practice of their former leaders—adherents to the line of expediency—brought it so prominently under notice a few years ago, that it has since been a staple of discussion in some botanical journals. Strict priority was the cry of the Americans, and some of them, with a zeal tinged with pedantry rather than bred of thought for the good of the science, endeavoured, in the application of the rule, to carry back to Virgil, Catullus, and other classical writers the scientific nomenclature of plants. But the event which most roused the attention of European botanists was the publication, in 1891, by Otto Kuntze, of his "Revisio generum plantarum"—a book remarkable no less for the industry and linguistic powers it exhibits than for its audacity and unconscious humour. Having assumed the *rôle* of a reformer of nomenclature, the author begins business by changing the names of some thousand genera and thirty thousand species, the new ones being only certified by the coincidently significant initials O. K.! As a curiosity of botanical literature the book will be historical; meanwhile its menace to systematic botany has had the effect of drawing from the Berlin school of systematists, which in recent years has shown so much activity, a statement of views which, after circulation, was submitted to the meeting of botanists at Genoa in 1892.

If the result of all the discussion and conference that has taken place has not been the establishment of a common agreement, they have at least served to bring out the points of divergence of view. We cannot, of course, discuss here the various issues upon which botanists are disagreed on this subject, but we may point out that the differences are mainly upon the starting point of nomenclature and the import of the specific name. The German school, which appears to carry with it a considerable bulk of continental opinion, prefers 1753 as the starting point for both genera and species to the date adopted in the Index, but makes an important declaration of adhesion to the principle of expediency as qualifying the strict priority rule. The Americans have come round to fix 1753 as the starting point of nomenclature, but unfortunately tack on to the priority rule a rider compelling the use of the earliest specific apellation wherever the genus is changed—a proper enough rule if botanists would only follow it, but which, if carried out retrospectively, as they propose, would involve a changing of plant names appalling to contemplate.

We have said sufficient to show the importance of the "Index Kewensis," and to make clear that its issue at this time is most opportune. The professed desire of all systematic botanists—although there is a wide gulf often betwixt their profession and their practice—is the establishing of a stable nomenclature. To this end the "Index Kewensis" is the most important contribution that has appeared since the "Genera Plantarum" of Bentham and Hooker was completed, and it supplements that work. What effect it will have in bringing about a modification of the views now held by continental and American botanists time will show. In the various discussions and conferences through which it has been attempted to settle questions of nomenclature, the Kew botanists have not taken active part; they have done better, and in the "Genera Plantarum," and now in this "Index Kewensis," we have practical expression of their views, and systematic botanical literature is enriched with what may be fairly termed the most valuable and important additions of the century. The "Index Kewensis" provides a book of reference which every library must possess, and there need be little doubt its nomenclature will take firm hold in this country at least.

For the detail and workmanship in the book we have nothing but praise. They are of a kind we are in the habit of associating with the race which has given us "the sausage for food and the encyclopædia for knowledge," but the book shows there is no monopoly in this sort of work. It is a lasting tribute to the painstaking industry, skill, and knowledge of Mr. Daydon Jackson. The citation of the place of first publication of a species is a most valuable feature in the book, supplying at once a clue through which its history may be followed, and the mention of the native country, necessarily general and brief in most instances, is a further helpful feature. We could have wished for a more extensive citation of the garden names of plants; in every-day life these are constantly turning up, and of no names is the history more difficult to run down. In a work such as this, the preparation of which has taken so many years, and the separate items of which are so multitudinous, slips, omissions, and inconsistencies must occur; but the number of these, so far as use has enabled us to judge, is remarkably small. "Menda non commemorata lector benevolens ipse corriget," says Mr. Daydon Jackson, as a preface to a list of "addenda et corrigenda" in each fasciculus; let us hope readers will also send them to Mr. Daydon Jackson, who may incorporate them in succeeding fasciculi.

It only remains to add, regarding the style and printing of the book, that the best work of the Clarendon Press is displayed in it.

ASTRONOMY FOR THE PUBLIC.

In the High Heavens. By Sir Robert S. Ball, F.R.S. (London: Isbister and Co., 1893.)

IT is not too much to say that at the present time Sir Robert Ball is the fashionable interpreter of astronomical science. He retails to the general public, by voice and by pen, the facts accumulated by astronomers who love their science for her own sake, the practical observer and the eloquent expositor thus mutually benefiting one another.

The book before us contains a collection of heterogeneous articles, several of which have appeared in the *Contemporary* and *Fortnightly*, and all of which are written in the style that pertains to magazines. To the student of science this diffuse method of expounding facts is distasteful. As Ruskin has remarked, "A downright fact may be told in a plain way; and we want downright facts at present more than anything else." The chapter on "The 'Heat Wave' of 1892" furnishes an example of what can be done in the way of connecting facts between which there is apparently no relation. The chapter begins with a description of the temperature observations in different parts of the world in July and August, 1892; it then passes to the movements of the moon, transits of Venus, and meteor-showers, in illustration of the accuracy of astronomical predictions as against the prediction of weather. The work of Lord Kelvin and Prof. G. H. Darwin on tidal prediction is next considered, and the tide-predicting machine of the former is described. Fourier's theorem is discussed, and some of the causes affecting the heights of tides mentioned, the chapter finally concluding with an account of Prof. Hale's photographs of a luminous eruption on the sun in July, 1892. The different scraps of information in this *omnium gatherum* are joined together with an ingenuity that is only acquired after long practice; but in spite of this, the article gives one the impression that the author has spun out his subject in order to provide copy.

The star 1830 Groombridge is a "King Charles' Head" to Sir Robert Ball, the reason being its large proper motion. We doubt whether he has ever written a book in which the number of miles per second, per minute, per hour, per day, per annum, &c. through which 1830 Groombridge travels, is not enlarged upon; and in the volume under review this runaway star is twice inflicted upon the reader. So persistently, indeed, does 1830 Goombridge appear, that we begin to wonder whether it is hurrying through space at a great rate in order to afford subject-matter for popular lecturers and writers on astronomy.

Another subject that has often given Sir Robert Ball an opportunity of exercising his descriptive faculty is the correlation between solar and terrestrial phenomena. But in view of the facts recently brought out in these columns and elsewhere, he may find it necessary to modify or substantiate the statement that "great outbursts on the sun have been immediately followed, I might almost say accompanied, by remarkable magnetic disturbances on the earth."

For the sake of historical accuracy, it may be well to